



Program

International Conference

Large Igneous Provinces, Mantle Plumes and Metallogeny In the Earth's History

Organized by

Institute of Geochemistry,
Siberian Branch,
Russian Academy of Sciences
(IGC SB RAS)

1 – 8 September 2015,
Irkutsk-Listvyanka, Russia

SCHEDULE

“Pribaikalskaya Hotel”, Listvyanka

Date	Event
September, 1	Night & Afternoon – Arrival of participants to Irkutsk, accommodation in “Pribaikalskaya” Hotel, Registration 13.00 – 14.00 – Lunch 14.00 – 18.00 – Visiting open-air museum Taltsy 19.00 – Dinner
September, 2	9.00 – 13.00 – Opening ceremony, Plenary session 13.00 – 14.00 – Lunch 14.00 – 17.50 – Plenary and thematic sessions 17.50 – 18.30 – Discussion 19.00 – Dinner / Ice-breaking party
September, 3	9.00 – 12.40 – Thematic sessions 13.00 – 14.00 – Lunch 14.00 – 17.20 – Thematic sessions 17.20 – 18.30 – Poster Session 19.00 – Dinner
September, 4	9.00 – 12.20 – Thematic sessions 13.00 – 14.00 – General discussion, concluding remarks 13.00 – 14.00 – Lunch 14.00 – 18.00 – Visiting Listvyanka and Baikal museum 19.00 – Banquet
September, 5	Morning – departure of participants (check-out time of Hotel is 12.00) 09.00 – Start of geological excursion

September, 2
Plenary session

- 9.00 – 9.10** *M.I. Kuzmin*
OPENING CEREMONY & WELCOMING ADDRESS
- 9.10 – 9.40** *M.I. Kuzmin*
CHANGE IN TECTONICS STYLE DURING THE EARTH EVOLUTION (FROM ITS ORIGIN TO THE PRESENT)
- 9.40 – 10.10** *N.V. Sobolev, A.V. Sobolev, D.V. Kuzmin, A.A. Tomilenko, V.G. Batanova, A.M. Logvinova, A.V. Tolstov, S.I. Kostrovitsky, D.A. Yakovlev*
EVOLUTION OF THE COMPOSITION OF SIBERIAN CRATONIC LITHOSPHERE DURING THE INTERACTION WITH SIBERIAN FLOOD BASALT (SFB) PROVINCE
- 10.10 – 10.40** *R.E. Ernst, U. Söderlund, M.A. Hamilton, K.R. Chamberlain, W. Bleeker, A.V. Okrugin, A.N. LeCheminant, T. Kolotilina, A.S. Mekhonoshin, K.L. Buchan, D.P. Gladkochub, A.N. Didenko, J.A. Hanes*
LONG-TERM NEIGHBORS: RECONSTRUCTION OF SOUTHERN SIBERIA AND NORTHERN LAURENTIA BASED ON MULTIPLE LIP BARCODE MATCHES OVER THE INTERVAL 1.9–0.7 GA
- 10.40 – 11.10** *B.-M. Jahn, G. Valui, N. Kruk, V. Gonevchuk, M. Usuki, J.T.J. Wu*
LIP OF NON-PLUME ORIGIN – CRETACEOUS MAGMATISM IN THE RUSSIAN FAR EAST: EXAMPLE FROM THE SIKHOTE-ALIN OROGENIC BELT
- 11.10 – 11.30** **Coffee break**
- 11.30 – 12.00** *Q. Wang, N. Bagdassarov*
MANTLE PLUMES AND STABILITY OF CRATONS
- 11.30 – 12.00** *K.-L. Wang, M.I. Kuzmin, S.Y. O'Reilly, W.L. Griffin, A.A. Vorontsov, N.J. Pearson, Y.-H. Chien*
GEOCHEMICAL FINGERPRINTS IN VITIM MANTLE XENOLITHS REVEAL PROGRESSIVE UPWELLING OF ASTHENOSPHERIC MANTLE IN LATE CENOZOIC
- 12.00 – 12.30** *D.P. Gladkochub, T.V. Donskaya, A.M. Mazukabzov, R.E. Ernst, S.A. Pisarevsky*
MESOPROTEROZOIC MANTLE PLUME BENEATH THE NORTHERN PART OF THE SIBERIAN CRATON
- 12.30 – 13.00** *N.A. Goryachev*
LARGE MESOZOIC MAGMATIC PROVINCE OF GRANITOIDS IN GOLD METALLOGENY OF THE NORTHERN PACIFIC RIM
- 13.00 – 14.00** **Lunch**

Plenary session

- 14.00 – 14.30** *P.Yu. Plechov, N.A. Nekrylov, M.S. Tikhonova, V.D. Shcherbakov*
EXTREMELY MAGNESIAN OLIVINES IN MAGMATIC ROCKS
- 14.30 – 15.00** *E.V. Sklyarov, Yu.V. Karyakin, N.S. Karmanov, N.D. Tostykh*
PLATINUM GROUP MINERALS IN DOLERITE OF THE ALEXANDRA LAND ISLAND (FRANZ JOSEF ARCHIPELAGO)
- 15.00 – 15.30** *A.E. Izokh, A.Ya. Medvedev, G.S. Fedoseev, G.V. Polyakov*
PLATINUM GROUP ELEMENTS DISTRIBUTION IN PERMO-TRIASSIC BASALTS OF SIBERIAN LARGE IGNEOUS PROVINCE
- 15.30 – 16.00** *Yu.G. Safonov*
ORE GENERATING FLUID-MAGMATIC SYSTEMS OF GIANT NOBLE AND NONFERROUS METAL DEPOSITS IN PROVINCES – REGIONS OF PLUME MAGMATISM
- 16.00 – 16.20** **Coffee break**

Silicic LIP magmatism in orogenic belts

- 16.20 – 16.50** *A.A. Tsygankov, V.B. Khubanov, A.V. Travin, E.N. Lepekhina, G.N. Burmakina, T.N. Antsyferova, O.V. Udoratina*
GRANITOID AREAS AS A CONSEQUENCE OF MANTLE PLUMES? (EXEMPLIFIED BY THE ANGARO-VITIM BATHOLITH)
- 16.50 – 17.10** *V.S. Antipin, O. Gerel, A.B. Perepelov, D. Odgerel*
LATE PALEOZOIC AND EARLY MESOZOIC RARE-METAL GRANITES OF LARGE IGNEOUS PROVINCES OF BAIKAL REGION AND MONGOLIA: COMPARATIVE GEOCHEMISTRY AND MAGMA SOURCES
- 17.10 – 17.30** *O. Gerel, B. Munkhtsengel, J. Dostal*
EARLY MESOZOIC ALKALINE GRANITOID MAGMATISM IN MONGOLIA: EVIDENCE OF PLUME ACTIVITY IN THE MONGOL-TRANSBAIKAL PROVINCE
- 17.30 – 17.50** *P. Kotler, S. Khromykh, A. Vladimirov, N. Kruk, O. Navozov, V. Khubanov*
PETROLOGY AND ISOTOPIC DATING OF KALBA-NARYM GRANITE BATHOLITH (EAST KAZAKHSTAN)
- 17.50 – 18.30** **Discussion**

September, 3

Plume-lithospheric interactions in Central Asia (Paleozoic to Cenozoic)

- 9.00 – 9.20** *E.V. Sklyarov, V.S. Fedorovsky, A.M. Mazukabzov, D.P. Gladkochub, T.V. Donskaya, A.V. Lavrenchuk, A.B. Kotov*
EVIDENCE OF PLUME-TECTONICS IN THE OLKHON COLLISIONAL SYSTEM (CENTRAL ASIAN OROGENIC BELT)
- 9.20 – 9.40** *N.N. Kruk, V.I. Krupchatnikov, N.I. Gusev, V.V. Vrublevsky*
EARLY DEVONIAN MAGMATISM IN ALTAI MOUNTAINS: RELATION OF PLUME- AND PLATE-TECTONIC FACTORS
- 9.40 – 10.00** *S.V. Khromykh, E.N. Sokolova, G.N. Burmakina, P.D. Kotler*
LATE PALEOZOIC MANTLE-CRUST MAGMATISM IN EASTERN KAZAKHSTAN AS A RESULT OF TARIM MANTLE PLUME ACTIVITY
- 10.00 – 10.20** *I.F. Gertner, V.V. Vrublevskii, T.S. Krasnova*
EVOLUTION OF HIGH-ALUMINA ALKALINE MAGMATISM IN THE CENTRAL ASIAN FOLDED BELT
- 10.20 – 10.40** *A.V. Vishnevskiy*
EARLY PALEOZOIC Pt-BEARING BELT OF ALTAI-SAYAN AREA (SOUTHERN SIBERIA): DEBATE ON ALASKAN-TYPE INTRUSIONS CRITERIA
- 10.40 – 11.00** **Coffee break**
- 11.00 – 11.20** *A.A. Vorontsov, T.Yu. Komaritsyna*
PLUME (GEOCHEMICAL AND ISOTOPE) SIGNATURE OF LATE MESOZOIC RIFTING VOLCANISM WITHIN THE UDA RIVER SECTOR, WESTERN TRANS-BAIKAL REGION
- 11.20 – 11.40** *G.S. Fedoseev*
MAFIC SILLOGENESIS IN DEPRESSION STRUCTURES OF THE CENTRAL ASIAN FOLD BELT
- 11.40 – 12.00** *A.M. Spiridonov, L.D. Zorina, Z.I. Kulikova, A.E. Budyak, A.V. Parshin, L.A. Pavlova, E.M. Granina*
DEPOSIT POGROMNOE – NON-TRADITIONAL INDUSTRIAL TYPE OF GOLD MINERALIZATION IN TRANSBAIKALIA
- 12.00 – 12.20** *S.S. Tsypukova, A.B. Perepelov, E.I. Demonterova, A.V. Ivanov, A.V. Travin, S.I. Dril, Yu.D. Scherbakov, D. Odgerel, M.Yu. Puzankov*
CENOZOIC ALKALINE-BASALTIC MAGMATISM OF DARKHAT DEPRESSION IN NORTH MONGOLIA: EVOLUTION, SOURCES AND ORIGIN OF MAGMA, TECTONIC ACTIVITY
- 12.20 – 12.40** *I.S. Chuvashova, S.V. Rasskazov*
THE LATEST GEODYNAMICS OF ASIA
- 13.00 – 14.00** **Lunch**

Precambrian mantle plume and LIP magmatism in Siberian craton

- 14.00 – 14.20** *D.P. Gladkochub, T.V. Donskaya, R.E. Ernst, S.A. Pisarevsky, A.M. Mazukabzov, M.A. Hamilton*
THREE STAGES OF INTRACONTINENTAL MAFIC MAGMATISM IN THE SOUTH-EASTERN PART OF THE SHARYZHALGAI INLIER OF THE SIBERIAN CRATONIC BASEMENT
- 14.20 – 14.40** *R.E. Ernst, A.V. Okrugin, R.V. Veselovskiy, S.L. Kamo, M.A. Hamilton, V. Pavlov, U. Söderlund, K.R. Chamberlain, C. Rogers*
THE 1501 MA KUONAMKA LIP OF NORTHERN SIBERIA: U-PB GEOCHRONOLOGY, GEOCHEMISTRY, PGE POTENTIAL, AND LINKS WITH OTHER CRUSTAL BLOCKS
- 14.40 – 15.00** *R.E. Ernst, D.P. Gladkochub, M.A. Hamilton, S.L. Kamo, S. Denyszyn, A.V. Okrugin, U. Söderlund*
NEWLY RECOGNIZED 1353-1338 MA LIP OF SIBERIA AND FORMERLY CONNECTED NORTHERN LAURENTIA: SPECULATIVE IMPLICATIONS FOR THE VOISEY'S BAY ORE DEPOSIT
- 15.00 – 15.20** *B.I. Gongalsky, A.L. Galyamov, G.D. Pavlovich, A.V. Petrov, K.Yu. Murashov*
3D MODEL OF THE HEAD OF A PALEOPROTEROZOIC PLUME IN THE SOUTHERN SIBERIAN CRATON
- 15.20 – 15.40** *O.M. Glazunov, T.A. Radomskaya, A.V. Salaev*
GEOCHEMICAL EVIDENCE OF PLATINOIDS IN ULTRABASIC ROCKS OF THE SOUTHERN TERMINATION OF NORTH-ASIAN CRATON
- 15.40 – 16.00** **Coffee break**

Intraplate alkaline magmatism, metallogeny and modeling

- 16.00 – 16.20** *S.I. Kostrovitsky, D.A. Yakovlev*
AGES, MANTLE SOURCE AND TECTONIC CONTROL OF KIMBERLITE VOLCANISM IN SIBERIAN PLATFORM
- 16.20 – 16.40** *M.D. Tomshin, A.V. Travin, K.M. Konstantinov*
THE SEQUENCE OF MAGMATIC EVENTS WITHIN THE NAKYN KIMBERLITE FIELD
- 16.40 – 17.00** *N.V. Vladykin*
PETROLOGY OF SUPER GIANT RARE-METAL DEPOSITS IN PLUME-RELATED ALKALINE ROCKS (EASTERN ANABAR REGION)
- 17.00 – 17.20** *N.S. Zhatnuev*
THE FLUID PLUMES MODEL AND FORMATION MECHANISMS OF THE MAGMATIC RESERVOIRS OF TRAP EFFUSION
- 17.20 – 18.30** **Poster session**

September, 4

Deep Earth Interior (special session)

- 9.00 – 9.30** *E. Ohtani*
FORMATION PROCESS AND LIGHT ELEMENTS OF
EARTH'S CORE
- 9.30 – 10.00** *K. Litasov*
MATERIAL TRANSPORT AND VOLATILE BUDGET IN THE
DEEP EARTH'S MANTLE
- 10.00 – 10.30** *D. Zedgenizov*
EVIDENCE FOR SUBDUCTED CRUSTAL SOURCES OF
DIAMONDS FROM SUBLITHOSPHERIC MANTLE
- 10.30 – 11.00** *A. Ivanov*
THE SOURCE REGION OF FLOOD BASALT IN THE
HYDROUS TRANSITION ZONE
- 11.00 – 11.20** **Coffee break**

Mantle petrology

- 11.20 – 11.40** *M.A. Gornova, S.I. Dril, A.B. Perepelov, K.-L. Wang, V.A. Belyaev*
MINERALOGICAL AND GEOCHEMICAL STUDY OF
LHERZOLITES FROM ALKALINE BASALTS OF TUMUSUN
VOLCANO (BAIKAL RIFT): REFERTILIZATION OR
PARTIAL MELTING?
- 11.40 – 12.00** *I.V. Ashchepkov, N.V. Vladykin, Z.V. Spetsius, A.M. Logvinova,
H. Downes, T. Ntaflos*
USAGE OF ECLOGITE THERMOBAROMETRY FOR
MANTLE PETROLOGY
- 12.00 – 12.20** *D.S. Yudin, S.A. Novikova, A.V. Travin, E.I. Zhimulev,
N.S. Tychkov, N.G. Murzintsev, T.N. Moroz*
MOBILITY OF ARGON IN PHLOGOPITE UNDER HIGH
TEMPERATURES AND PRESSURES
- 12.20 – 13.00** **General discussion, concluding remarks**
- 13.00 – 14.00** **Lunch**

Poster session and distant participation

V.I. Alekseev, Yu.B. Marin

SIMILARITY OF ORE-MAGMATIC SYSTEMS IN THE FAR EAST LARGE IGNEOUS PROVINCE OF LITHIUM-FLUORIC GRANITES

R. Akhundjanov, S.O. Zenkova, F.B. Karimova, S.S. Saydiganiev

ORE-MAGMATIC SYSTEM OF ULTRABASIC-BASIC INTRUSIONS OF THE MIDDLE AND SOUTHERN TIEN-SHAN (UZBEKISTAN)

T.B. Bayanova, P.A. Serov

LARGE LOW-SULFIDE PT-PD DEPOSITS OF THE KOLA PENINSULA - DERIVATIVES PLUME MAFIC MAGMATISM

E.S. Borisenko, E.L. Kunakkuzin, P.A. Serov

GEOLOGICAL AND GEOCHEMICAL FEATURES OF THE DIFFERING IN AGE MONCHETUNDRA MASSIF ROCKS (KOLA PENINSULA)

B.R. Choudhary, G.N. Jadhav

GEOCHEMISTRY AND PETROGENESIS OF BASALTIC LAVA FLOWS OF THE WAI SUBGROUP, DVP WESTERN INDIA

S.I. Dril, S.A. Sasim, Yu.V. Noskova

SR-O ISOTOPE SYSTEMS AND SOURCES FOR COLLISION-RELATED GRANITOIDS OF THE MONGOLO-OKHOTSK OROGENIC BELT (EXEMPLIFIED BY THE UNDINSKY COMPLEX, EASTERN TRANSBAIKALIA)

R.E. Ernst, S.A. Pisarevsky

DATABASES RELATED TO LARGE IGNEOUS PROVINCES

D.P. Gladkochub, A.M. Larin, A.B. Kotov, N.V. Vladykin, V.P. Kovach, E.V. Sklyarov, T.V. Donskaya, S.D. Velikoslavinskii

A POSSIBLE ROLE OF THE SUPERPLUME IN GENESIS OF UNIQUE KATUGIN RARE METAL DEPOSIT (ALDAN SHIELD)

B.I. Gongalsky, N.A. Krivolutskaya, Yu.G. Safonov

MAFIC DIKES AS INDICATORS OF TECTONIC AND MAGMATIC PROCESSES IN THE SOUTHERN SIBERIAN CRATON

N.I. Gusev, S.P. Shokalsky

EARLY CARBONIFEROUS MANTLE MAGMATISM PRODUCING TITANIUM-MAGNETITE ORE IN THE GORNY ALTAI

V.A. Guryanov, A.Yu. Peskov

ULKAN PALEORIFT STRUCTURE IN THE SOUTH-EASTERN ENVIRONS OF THE SIBERIAN PLATFORM: AGE, CONDITIONS, GEODYNAMIC SETTING AND METALLOGENY

V.A. Guryanov, V.S. Prikhod'ko, A.Yu. Peskov

PRISTANOVY ZONE OF THE PALEOPROTEROZOIC COLLISION – A NEW PLATINUM-COPPER-COBALT-NICKEL PROVINCE ON THE SOUTHEASTERN PERIPHERY OF THE SIBERIAN PLATFORM

V.I. Kosyakov, E.F. Sinyakova, A.S. Borisenko, V.A. Shestakov

ON THE PROBLEM OF SULFATE SULFUR ASSIMILATION BY SULFIDE MELT

E.L. Kunakkuzin, T.B. Bayanova, L.I. Nerovich, E.S. Borisenko, P.A. Serov

ISOTOPE-GEOCHEMICAL ND-SR FEATURES OF THE PALEOPROTEROZOIC PGE-BEARING MONCHETUNDRA MASSIF MAFIC ROCKS (FENNOSCANDIAN SHIELD)

Yu.V. Laptev, A.S. Borisenko, I.R. Prokopiev

CO₂ EFFECT ON HETEROGENIZATION CONDITIONS OF SULPHATE-CHLORIDE-CARBONIC FLUIDS AND GOLD, PYRITE, AND MOLYBDENITE SOLUBILITY

B. He, Y.-T. Zhong, Y.-G. Xu

DID THE SIBERIAN TRAPS TRIGGER PERMO-TRIASSIC BOUNDARY MASS EXTINCTION?

V.I. Kosyakov, E.F. Sinyakova, A.S. Borisenko, V.A. Shestakov

ON THE PROBLEM OF SULFATE SULFUR ASSIMILATION BY SULFIDE MELT

V.V. Kulikova, V.S. Kulikov, Ya.V. Bychkova

EVOLUTION OF PLUME MAGMATISM AND ITS ASSOCIATED LARGE IGNEOUS PROVINCES IN THE FENNOSCANDIA FROM THE ARCHEAN TO THE PALEOZOIC

L.N. Morozova, T.B. Bayanova, A.V. Basai, P.A. Serov, E.S. Borisenko, E.L. Kunakkuzin

GEOLOGY AND GEOCHEMISTRY OF RARE-METAL PEGMATITES FROM THE KOLMOZERO DEPOSIT (BAL TIC SHIELD, RUSSIA)

L.I. Nerovich, T.B. Bayanova, E.S. Borisenko, P.A. Serov, E.L. Kunakkuzin

DIKES TITANIFEROUS DOLERITES OF THE MONCHA TUNDRA MASSIF – THE REAL REFLECTION OF THE COMPOSITION OF THE PALEOPROTEROZOIC PLUME KOLA REGION

A.V. Okrugin

HIGH-Ti ALKALINE ULTRABASIC-BASIC ROCKS IN THE RIVER BASIN OF ANABAR AS A CONTINUATION OF THE MAIMECHA-KOTUY PROVINCE

F. Pirajno

THE CONTINENTAL MARGIN OF EASTERN ASIA: HOME OF A CRETACEOUS-CENOZOIC (VERY) LARGE IGNEOUS PROVINCE?

V.F. Polin, S.I. Dril

VARIATIONS OF THE LEAD ISOTOPE RATIOS IN POLYFORMATION MAGMATITES OF THE KETKAP-YUNA MAGMATIC PROVINCE (ALDAN SHIELD) – AN EVIDENCE OF INTERACTION OF MANTLE DIAPIRS AND CONTINENTAL CRUST

T.A. Ponomareva

PETROPHYSICAL MODEL OF LITHOSPHERE BENEATH THE NORTH OF THE URALS

S.N. Prusskaya, Yu.R. Vasil'ev

GEOLOGIC POSITION OF THE ONEKA INTRUSIVE COMPLEX (WESTERN SIBERIAN PLATFORM)

V.N. Puchkov

MAGMATIC COMPLEXES OF THE URALS AS PROBABLE FRAGMENTS OF LIPS

A. Romanko, A. Savichev, S. Stepanov, S.M. Tabatabaeimanesh

INTRAPLATE NORMAL AND CA-RICH IGNEOUS ROCKS ASSOCIATED WITH CARBONATITES IN WEST BALUCHESTAN, MIDDLE EAST

I.D. Ryabchikov, L.N. Kogarko

THERMODYNAMIC PARAMETERS OF MANTLE PLUME MATERIAL

V.N. Sharapov, Y.V. Perepechko, Sorokin K.

FACTORS DETERMINING THE SIZE OF THE ASTHENOSPHERE ZONES GENERATING INTRAPLATE LARGE PROVINCE OF IGNEOUS ROCKS

Y.Y. Shelepov, R.A. Shelepaev

COMPOSITION OF SHIBEINGOL GABBRO-MONZONITE-GRANOSYENITE COMPLEX (LAKE ZONE OF WESTERN MONGOLIA)

E.M. Sheremet

THE ORIGIN OF GRANITOIDS OF RAPAKIVI FORMATION BY PLUME TECTONICS OR BY SUBDUCTION PLATE-TECTONIC?

V.S. Shkodzinskiy

ORIGIN OF MAGMAS ACCORDING TO MODERN DATA ON HOT ACCRETION OF THE EARTH

A.V. Travin

EPISODICITY OF CENTRAL ASIAN CALEDONIAN ACCRETION-COLLISION EVENTS: IMPLICATIONS FOR SUPERPLUME-PLATE INTERACTIONS

R.V. Veselovskiy, S.N. Thomson, A.A. Arzamastsev, V.S. Zakharov

POST-DEVONIAN TECTONICS OF THE NE FENNOSCANDIA INFERRED FROM APATITE FISSION TRACK DATING OF THE Khibina MASSIF (KOLA PENINSULA)

C.Y. Wang

NEW TEXTURAL AND MINERALOGICAL CONSTRAINTS ON THE ORIGIN OF THE XINJIE FE-TI-V OXIDE DEPOSIT IN THE EMEISHAN LARGE IGNEOUS PROVINCE (SW CHINA)

Y.-G. Xu

CONTRASTING PLUME-LITHOSPHERE INTERACTIONS IN THE GENERATIONS OF PERMIAN LARGE IGNEOUS PROVINCES IN CHINA

V.V. Yarmolyuk

LATE MESOZOIC MAGMATIC PROVINCE OF EAST ASIA AS A RESULT OF PLUME-LITHOSPHERE INTERACTION ON CONVERGENT PLATE BOUNDARIES

S. Zhmodik, M. Buslov, P. Ivanov, E. Ayriyants, D. Belyanin, A. Borisenko

MESOZOIC STAGE OF THE CARBONATITE AND KIMBERLITE MAGMATISM AT THE ANABAR AREA

L.M. Zhitova

ORE-MAGMATIC SYSTEM OF METAL-BEARING REEFS OF THE BUSHVELD COMPLEX, SOUTH AFRICA

S. Zhmodik, M. Buslov, P. Ivanov, E. Ayriyants, D. Belyanin, A. Borisenko

MESOZOIC STAGE OF THE CARBONATITE AND KIMBERLITE MAGMATISM AT THE ANABAR AREA

R.A. Badmatsyrenova

LA-ICP-MS STUDY OF APATITE FROM THE ARSENTYEV FE-TI-V-P DEPOSIT, TRANSBAIKALIA, RUSSIA